

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-5, 8-10, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko (JP 2002-226675) in view of Matsumura et al. (JP 2001-294445). The English language translations of the Japanese documents are used for the citations below.

Regarding claims 1-5: Kaneko teaches a paste composition (title) containing an inorganic filler/silica, an epoxy resin (pg. 2 claim 1), a curing accelerator/imidazole (pg. 10, para. 23), a solvent/butyl carbitol acetate (pg. 6 para. 11), which has a boiling point of 246.7 °C and an ester bond, as well as gamma-butyl lactone (pg. 8 para. 15) which has a boiling point of 205 °C and an ester-lactone structure.

Kaneko does not teach the specific filler of claim 2. However, Matsumura et al. teaches barium titanate (pg. 6 para. 9). Kaneko and Matsumura et al. are analogous art since they are both concerned with the same field of endeavor, namely insulating paste compositions used for conductor parts. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the specific filler of Matsumura et al. with the composition of Kaneko and would have been motivated to do so for such desirable properties as high dielectric constants for miniaturized electronic (Matsumura et al. pg. 3 para. 2 and pg. 6 para. 9).

Kaneko also does not disclose a particle size of 5 μm or smaller or the greater mean particle size is 3 times more than the minimum particle size. However, Matsumura et al. teaches a mean particle diameter of 0.5-5 μm and another inorganic filler with a mean particle diameter of 0.1-1 μm (pg. 3 claims 8-9). 5 μm is 3 times or more than 1 μm . At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the disclosed particle sizes of Matsumura et al. with the composition of Kaneko and would have been motivated to do so for such desirable properties as finished smoothness, and less coagulation, as evidenced by Matsumura et al. (pg. 7 para. 11 and pg. 8 para. 14).

Kaneko also does not disclose the amount of solvent. However, Matsumura et al. teaches 21% solvent (example 1). At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the amount of solvent of Matsumura et al. with the composition of Kaneko and would have been motivated to do so to obtain the desired viscosity.

Regarding claim 8: Kaneko teaches a phosphoric ester (pg. 2 claim 1).

Regarding claims 9, 10 and 17: Kaneko teaches solidifying/curing the composition (pg. 9 para. 19). Not disclosed is the solvent being removed of the content of the inorganic filler after the solvent removal or a film thickness of the composition in a capacitor. However, Matsumura et al. teaches the composition obtained by drying/removing the solvent (page 11 para. 24) and 88.7% of solids in the composition being the inorganic filler, based on calculation of example 1 (page 17 table 1) and a film thickness of 10 microns (page 14, #2 in para. 31). The composition is in a capacitor as

an insulating layer (para. 2). While Matsumura et al. does not directly teach that the porosity is less than 30% by volume, since all of the components are present in the composition and it is dried in the same manner as the instant invention, it is implicit that the composition would have this property. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with this property. At the time of the invention a person having ordinary skill in the art would have found it obvious to remove the solvent as in Matsumura et al. in the composition of Kaneko and would have been motivated to do so since the organic solvent residue will worsen the sintering property of the composition, as evidenced by Matsumura et al. (pg. 15 para. 33).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko (JP 2002-226675) in view of Matsumura et al. (JP 2001-294445) as applied to claim 1 above and in further view of Ingman et al. (US 2003/0026584). The English language translations of the Japanese documents are used for the citations below.

Regarding claim 18: Kaneko teaches the basic claimed composition as set forth above. Kaneko does not teach an optical wire. However Ingman et al. teaches an optical wire/optical fiber made with a resin and containing inorganic filler particles (para. 70). Kaneko and Ingman et al. are analogous art because they are both concerned with the same field of endeavor, namely resin composition comprising inorganic filler

particles. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the optical wire/fiber of Ingman et al. with the composition of Kaneko and would have been motivated to do so because the composition is insulating, which is needed in optical fibers.

Claims 11-13, 15, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko (JP 2002-226675) in view of Matsumura et al. (JP 2001-294445). The English language translations of the Japanese documents are used for the citations below.

Regarding claims 11, 12, 15: Kaneko teaches a paste composition (title) containing an inorganic filler/silica, an epoxy resin (pg. 2 claim 1), a curing accelerator/imidazole (pg. 10, para. 23).

Kaneko does not teach the specific filler. However, Matsumura et al. teaches barium titanate (pg. 6 para. 9). At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the specific filler of Matsumura et al. with the composition of Kaneko and would have been motivated to do so for such desirable properties as high dielectric constants for miniaturized electronic (Matsumura et al. pg. 3 para. 2 and pg. 6 para. 9).

Kaneko also does not disclose a particle size of 5 μm or smaller or the greater mean particle size is 3 times more than the minimum particle size. However, Matsumura et al. teaches a mean particle diameter of 0.5-5 μm and another inorganic filler with a mean particle diameter of 0.1-1 μm (pg. 3 claims 8-9). 5 μm is 3 times or

more than 1 μm . At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the disclosed particle sizes of Matsumura et al. with the composition of Kaneko and would have been motivated to do so for such desirable properties as finished smoothness, and less coagulation, as evidenced by Matsumura et al. (pg. 7 para. 11 and pg. 8 para. 14).

Regarding claim 13: Kaneko teaches 50% filler based on the total of the filler and the resin (example 1).

Regarding claim 16: Kaneko teaches a phosphoric ester (pg. 2 claim 1).

Regarding claim 19: Kaneko does not teach a capacitor. However, Matsumura et al. teaches the composition is in a capacitor as an insulating layer (para. 2). At the time of the invention a person having ordinary skill in the art would have found it obvious to substitute the composition of Kaneko in the capacitor of Matsumura et al. and would have been motivated to do so since the composition of Kaneko has high adhesive reliability (pg. 4 para. 5).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko (JP 2002-226675) in view of Matsumura et al. (JP 2001-294445) as applied to claim 11 above and in further view of Ingman et al. (US 2003/0026584). The English language translations of the Japanese documents are used for the citations below.

Regarding claim 20: Kaneko teaches the basic claimed composition as set forth above. Kaneko does not teach an optical wire. However Ingman et al. teaches an optical wire/optical fiber made with a resin and containing inorganic filler particles (para.

70). At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the optical wire/fiber of Ingman et al. with the composition of Kaneko and would have been motivated to do so because the composition is insulating, which is needed in optical fibers.

Response to Arguments

Applicant's arguments filed October 6, 2009 have been fully considered but they are not persuasive.

A) Applicant's argument that the combination of Kaneko and Matsumura et al. does not lead a person of ordinary skill in the art to the specific selection of a solvent having a boiling point of 160 °C or higher in an amount of 25 wt% or less and does not disclose the results of such selection is not persuasive. While Kaneko teaches solvents with boiling points both above and below 160 °C, the reference lists a finite number of identified, predictable solvents from which to choose. Therefore, a person having ordinary skill in the art would recognize the ability to use any of the solvents of the reference. Furthermore, example 1 discloses using phenyl glycidyl ether as a solvent/diluting agent in an amount of 4.5 wt%. The boiling point of phenyl glycidyl ether is 245 °C. Therefore there is a specific species example taught in the prior art falling within the claimed genus. Also, while the prior art does not disclose void suppression or high dielectric constants resulting from solvent boiling point or amount, mere recognition of latent properties in the prior art does not render nonobvious an otherwise known invention (see MPEP 2145 II).

B) Applicant's argument that Matsumura et al. sinters the composition after being coated and the amount of voids can change is not persuasive. Matsumura et al. coats and dries first, then sinters (pgs. 11-12). Therefore, before the sintering process, the drying step occurs in the same manner as the instant invention and the porosity would be implicitly less than 30% by volume.

C) Applicant's arguments that Matsumura et al. teaches the composition is calcined and therefore there are no longer any organic compounds and the inorganic filler level is 100 wt% is not persuasive. Before the calcination step, Matsumura et al. dries the composition (pgs. 11-12). Therefore, the organic components are still present and the inorganic filler level is within the claimed range.

D) In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Specifically, while Ingman et al. does not teach all the limitations of claim 18, the combination of references makes the claim *prima facie* obvious.

E) Applicant's argument that Kaneko and Matsumura et al. do not recognize the concept of using a larger and a smaller size filler to increase the filling factor and increase the relative dielectric constant is not persuasive. Mere recognition of latent properties in the prior art does not render nonobvious an otherwise known invention (see MPEP 2145 II). Matsumura et al. uses different sized filler falling within the

claimed ranges. The fact that it is done for different reasons that the applicant does not carry patentable weight (see MPEP 2141 II A2).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan McCulley whose telephone number is (571)270-3292. The examiner can normally be reached on Monday - Thursday 7:30-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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